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EXPRESS MAIL NUMBER: EL 451 599 641 USIN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Amin <i>et al.</i>)	Art Unit: 2822
)	
Confirmation No.: 2156)	Examiner:
)	Examiner:
Serial No. 09/839,636)	Not Assigned
)	
Filed: April 20, 2001)	Attorney Docket: 11090-035-999 (formerly M-8715-2C US)
For: Quantum Bit with a Multi-Terminal Junction and Loop with a Phase Shift)	March 6, 2003
)	

AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

Pursuant to 37 C.F.R. § 1.115, please enter the following amendments and consider the following remarks in connection with the above-identified application.

IN THE PTO FORM 1449 FILED MAY 16, 2001

Please amend the entries in the PTO form 1449 filed May 16, 2001 to read as follows. A marked-up copy of the corrections is attached to this Amendment as Appendix A. No new matter has been added.

From the PTO-1449 Form filed May 16, 2001, Sheet 1 of 3

U.S. PATENT DOCUMENTS

AA 5,917,322 A Jun. 29, 1999 Gershenfeld et al. 324 307

OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

AC Gianni Blatter, Vadim B. Geshkenbein, and Lev B. Ioffe, "Design aspects of superconducting-phase quantum bits", *Physical Review B*, Vol. 63, 174511, pp. 1-9 (2001).

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- AD H.-J. Briegel, W. Dür, J. I. Cirac, and P. Zoller, "Quantum repeaters for communication", ArXiv.org: quant-ph/9803056, pp. 1–8 (1998).
- AE C. Bruder, A. van Otterlo, and G. T. Zimanyi, "Tunnel junctions of unconventional superconductors", *Physical Review B*, Vol. 51, pp. 12904-12907 (1995).
- AF A. Chrestin, T. Matsuyama, and U. Merkt, "Evidence for a proximity-induced energy gap in Nb/InAs/Nb junctions", *Physical Review B*, Vol. 55, pp. 8457-8465 (1997).
- AG Aykutlu Dâna, Charles Santori, and Yoshihisa Yamamoto, "Electrostatic force spectroscopy of a single InAs quantum dot", ArXiv.org: cond-mat/0103125, pp.1–5 (2001).
- AH R. Feynman, "Simulating Physics with Computers", *International Journal of Theoretical Physics*, Vol. 21, pp. 467–488 (1982).
- AI Lov K. Grover, "A fast quantum mechanical algorithm for database search", ArXiv.org: quant-ph/9605043, pp. 1–8 (1996).
- AJ T. F. Havel, S. S. Somaroo, C.-H. Tseng, and D. G. Cory, "Principles and demonstrations of quantum information processing by NMR spectroscopy", ArXiv.org: quant-ph/9812086, pp. 1–42 (1998).
- AK Arne Jacobs, Reiner Kümmel, and Hartmut Plehn, "Proximity Effect, Andreev Reflections, and Charge Transport in Mesoscopic Superconducting-Semiconducting Heterostructures", ArXiv.org: cond-mat/9810343, pp. 1–8, (1998).
- AL Jonathan A. Jones, Michele Mosca, and Rasmus H. Hansen, "Implementation of a quantum search algorithm on a quantum computer", *Nature*, Vol. 393, pp. 344-346 (1998).

From the PTO-1449 Form filed May 16, 2001, Sheet 2 of 3

- AC P. Joyez, P. Lafarge, A. Filipe, D. Esteve, and M. H. Devoret, "Observation of Parity-Induced Suppression of Josephson Tunneling in the Superconducting Single Electron Transistor", *Physical Review Letters*, Vol. 72, pp. 2458-2461 (1994).
- AD A.Yu.Kitaev, "Quantum measurements and the Abelian Stabilizer Problem", ArXiv.org: quant-ph/9511026, pp. 1-22 (1995).
- AE Emanuel Knill, Raymond Laflamme, and Wojciech H. Zurek, "Resilient Quantum Computation", *Science*, Vol. 279, pp. 342-345 (1998).

- AF Alexander N. Korotkov and Mikko A. Paalanen, "Charge sensitivity of radio frequency single-electron transistor", *Applied Physics Letters*, Vol. 74, pp. 4052-4054 (1999).
- AG S. G. Lachenmann, I. Friedrich, A. Förster, D. Uhlisch, and A. A. Golubov, "Charge transport in superconductor/semiconductor/ normal-conductor step junctions", *Physical Review B*, Vol. 56, pp. 108-115 (1997).
- AH J.E. Mooij, T.P. Orlando, L. Levitov, L. Tian, C.H. van der Wal, and S. Lloyd, "Josephson Persistent-Current Qubit", *Science*, Vol. 285, pp. 1036-1039 (1999).
- AI Y. Nakamura, Yu. A. Pashkin, and J. S. Tsai, "Coherent control of macroscopic quantum states in a single-Cooper-pair box", *Nature*, Vol. 398, pp. 786-788 (1999).
- AJ A.N. Omelyanchouk and Malek Zareyan, "Ballistic Four-Terminal Josephson Junction: Bistable States and Magnetic Flux Transfer", ArXiv.org: cond-mat/9905139, pp. 1-17 (1999).
- AK R. de Bruyn Ouboter and A. N. Omelyanchouk, "Macroscopic quantum interference effects in superconducting multiterminal microstructures", *Superlattices and Microstructures*, Vol. 25, pp. 1005-1017 (1999).
- AL V.V. Ryazanov, V.A. Oboznov, A.Yu. Rusanov, A.V. Veretennikov, A.A. Golubov, and J. Aarts, "Coupling of two superconductors through a ferromagnet: evidence for a π -junction", ArXiv.org: cond-mat/0008364, pp. 1-6 (2000).

From the PTO-1449 Form filed May 16, 2001, Sheet 3 of 3

- AC R. J. Schoelkopf, P. Wahlgren, A. A. Kozhevnikov, P. Delsing, and D. E. Prober, "The Radio-Frequency Single-Electron Transistor (RF-SET): A Fast and Ultrasensitive Electrometer", *Science*, Vol. 280, pp. 1238-1242 (1998).
- AD R. R. Schulz, B. Chesca, B. Goetz, C. W. Schneider, A. Schmehl, H. Bielefeldt, H. Hilgenkamp, J. Mannhart, and C. C. Tsuei, "Design and realization of an all d-wave dc π -superconducting quantum interference device", *Applied Physics Letters*, Vol. 76, pp. 912-914 (2000).
- AE P. Shor, "Introduction to Quantum Algorithms" ArXiv.org: quant-ph/0005003, pp. 1-23 (2000).
- AF P. Shor, "Polynomial-Time Algorithms For Prime Factorization And Discrete Logarithms On A Quantum Computer", ArXiv.org: quant-ph/9508027, pp. 1-26 (1995).
- AG P. Shor, "Polynomial-Time Algorithms For Prime Factorization And Discrete Logarithms On A Quantum Computer", *SIAM Journal of Scientific and Statistical Computing*, Vol. 26, pp. 1484-1509 (1997).

- AH F. Tafuri, F. Carillo, F. Lombardi, F. Miletto Granozio, F. Ricci, U. Scotti di Uccio, A. Barone, G. Testa, E. Sarnelli, and J. R. Kirtley, "Feasibility of biepitaxial $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ Josephson junctions for fundamental studies and potential circuit implementation", *Physical Review B*, Vol. 62, pp. 431-438 (2000).
- AI L. M. K. Vandersypen, M. Steffen, G. Breyta, C. S. Yannoni, R. Cleve, and I. L. Chuang, "Experimental Realization of an Order-Finding Algorithm with an NMR Quantum Computer", *Physical Review Letters*, Vol. 25, pp. 5452-5455 (2000).
- AJ B. Vleeming, "The Four-terminal SQUID", PhD. Dissertation Leiden University, pp. 1-100 (1998).
- AK A.F. Volkov, and R. Seviour, "Phase coherent effects in multiterminal superconductor/ normal metal mesoscopic structures", ArXiv.org: cond-mat/0003370, pp. 1-6 (2000).
- AL P. D. Ye, L. W. Engel, D. C. Tsui, J. A. Simmons, J. R. Wendt, G. A. Vawter, and J. L. Reno, "High Magnetic Field Microwave Conductivity of 2D Electrons in an Array of Antidots", ArXiv.org: cond-mat/0103127, pp. 1-4 (2001).